



## Research Report 1971

# Assessing the Tailored Adaptive Personality Assessment System for Army Special Operations Forces Personnel

**Christopher D. Nye**  
Drasgow Consulting Group

**Scott A. Beal**  
U.S. Army Research Institute

**Fritz Drasgow**  
Drasgow Consulting Group

**J. Douglas Dressel and Leonard A. White**  
U.S. Army Research Institute

**Stephen Stark**  
Drasgow Consulting Group

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**MICHELLE SAMS, Ph.D.  
Director**

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|  |                                |                              | <b>19b. TELEPHONE NUMBER</b><br>(include area code)<br>703-545-2316       |                                |



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**Christopher D. Nye**  
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**J. Douglas Dressel and Leonard A. White**  
U.S. Army Research Institute

**Stephen Stark**  
Drasgow Consulting Group

**Fort Leavenworth Research Unit**  
**James Lussier, Chief**

**U.S. Army Research Institute for the Behavioral and Social Sciences 6000  
6<sup>th</sup> Street, Bldg 1464  
Fort Belvoir, VA 22060**

**January 2014**

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# ASSESSING THE TAILORED ADAPTIVE PERSONALITY ASSESSMENT SYSTEM FOR ARMY SPECIAL OPERATIONS FORCES PERSONNEL

## EXECUTIVE SUMMARY

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### Research Requirement:

The Tailored Adaptive Personality Assessment System (TAPAS) was developed under the Army's Small Business Innovation Research (SBIR) grant program. It takes advantage of modern psychometric methods and computing technology to offer a new generation of personality measures that meet the assessment needs of diverse occupations and military occupational specialties (MOS). The TAPAS can measure up to 26 personality dimensions (a.k.a., facets). Of those facets, 21 cover the behavioral patterns associated with the well-known Big Five personality framework (Goldberg, 1993). The remaining five dimensions cover military-specific personality traits (i.e., Physical Conditioning, Courage, Team-Orientation, Adventure Seeking, Situational Awareness).

Previous research has shown that the TAPAS is a valid measure for predicting a broad range of performance criteria in the U.S. Army including Army Physical Fitness Test (APFT) scores, disciplinary incidents, and attrition (Knapp & Heffner, 2012). Additional research demonstrated the utility of the TAPAS for predicting performance within specific MOS (Nye, Drasgow, Chernyshenko, Stark, Kubisiak, White, & Jose, 2012) and for identifying and selecting high-potential Soldiers for recruiting duty assignments (Horgen, Nye, White, LaPort, Hoffman, Drasgow et al., 2013). Given its validity in past research, the TAPAS may be useful for identifying Soldiers who will be selected for Army Special Operations Forces (ARSOF) training. Therefore, the goal of the present research was to explore the potential utility of the TAPAS for predicting outcomes in an ARSOF assessment and selection course.

### Method:

The data for this research included TAPAS scores and ARSOF selection outcomes for 1,216 Soldiers attending an assessment and selection course. The outcome reflected whether Soldiers were selected for ARSOF training following the course. Data were collected from February to June 2012. All respondents completed the TAPAS immediately prior to beginning the ARSOF course.

The goal of this research was to identify Soldiers who were selected for ARSOF training after completing the assessment and selection course. We used correlation and regression analyses to examine the predictive validity of individual TAPAS scales for ARSOF selection. We also developed a composite of TAPAS scales for predicting selection, which could be useful for identifying high-potential Soldiers who are likely to perform well in an ARSOF course. Similar composites are being developed for the selection and classification of Soldiers in the U.S. Army General Purpose Forces (GPF; Nye, Drasgow, Chernyshenko et al., 2012). However, given the nature of ARSOF, some of the TAPAS scales that predict selection in that group are likely to differ from those that predict performance in the broader group of Army GPF applicants.

### Findings:

The results of this research demonstrated that the TAPAS scale scores were useful predictors of ARSOF selection. Therefore, we created a composite of TAPAS scales for predicting this outcome. With this composite, only 35% of individuals that scored in the lowest quintile (i.e., individuals with composite scores in the lowest 20%) were selected to continue in the ARSOF training program. By contrast, 61% of individuals scoring in the highest quintile on the TAPAS composite were selected. These results suggest that the TAPAS may have practical importance when used to identify high potential ARSOF candidates.

#### Utilization and Dissemination of Findings:

The results presented here provide preliminary evidence for the validity of the TAPAS to predict performance outcomes in an ARSOF assessment and selection course. However, more research is needed to support the utility of the TAPAS for this purpose. Collecting additional data from ARSOF candidates would provide larger participant samples that could be used to cross-validate the TAPAS composite developed for this research and explore differences across groups (e.g., MOS 11B, 18X) entering ARSOF. Additional research is needed to explore the validity of the TAPAS for predicting training performance subsequent to ARSOF assessment and selection.

# ASSESSING THE TAILORED ADAPTIVE PERSONALITY ASSESSMENT SYSTEM FOR ARMY SPECIAL OPERATIONS FORCES PERSONNEL

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# **ASSESSING THE TAILORED ADAPTIVE PERSONALITY ASSESSMENT SYSTEM FOR ARMY SPECIAL OPERATIONS FORCES PERSONNEL**

## **Introduction**

Interest in personality as a predictor of performance has increased considerably over the past two decades. Much of this interest was galvanized by empirical evidence showing that personality constructs, such as conscientiousness, predict performance across a diverse array of civilian and military occupations (e.g., Barrick & Mount, 1991; Campbell & Knapp, 2001) and provide incremental validity beyond general cognitive ability (Schmidt & Hunter, 1998).

Despite growing interest and positive empirical support for their validity, personality measures have several limitations when used to make important personnel decisions. A major concern is applicant faking in high-stakes settings. Past research has shown that test takers can easily identify the correct or socially desirable responses on single statement personality measures and increase or decrease their scores when sufficiently motivated (White, Young, & Rumsey, 2001). As a result, faking is a potential threat to the validity of the measure and may affect its utility in operational selection settings (White, Young, Hunter, & Rumsey, 2008).

To help address issues with faking, the Tailored Adaptive Personality Assessment System (TAPAS) was developed under the Army's Small Business Innovation Research (SBIR) grant program. It takes advantage of modern psychometric methods and computing technology to offer a new generation of personality measures that (a) are fake-resistant, (b) utilize computer adaptive technology to measure across a broad range of trait continua, and (c) are easily customized to meet the assessment needs of diverse occupations and military occupational specialties (MOS). The TAPAS can measure up to 26 personality dimensions or facets. Of these, 21 cover the behavioral patterns associated with the well-known Big Five personality framework (Goldberg, 1993). The remaining five dimensions cover military-specific personality traits (Physical Conditioning, Courage, Team-Orientation, Adventure Seeking, Situational Awareness).

TAPAS tests utilize a multidimensional pairwise preference (MDPP) format that is designed to be resistant to faking in a way that is similar to the Army's Assessment of Individual Motivation (AIM; White & Young, 1998) inventory. Specifically, items are presented in pairs and respondents must choose the statement in each pair that is "more like me." In the past, such a response format produced only ipsative scores (i.e., scores that sum to the same constant for each respondent), which are largely unsuitable for personnel selection. However, the MDPP scoring system used for the TAPAS has overcome this major limitation and is capable of recovering normative scores regardless of how many dimensions are assessed (Stark & Chernyshenko, 2007; Stark, Chernyshenko, Drasgow, & White 2012). An advantage of this format is that it is difficult for test-takers to fake a desirable response. Items in each pair are matched based on social desirability and extremity on the dimensions that they assess, which further reduces the likelihood that respondents will be able to identify a correct response and artificially inflate their scores. Due to this measurement approach, the TAPAS is expected to demonstrate validity even in high-stakes settings where applicants may be motivated to respond dishonestly.

## **Validity of the TAPAS**

In 2006, the US Army Research Institute (ARI) initiated a longitudinal research project to examine the validity of non-cognitive measures for predicting Army outcomes. The goal of the *Validating Future Force Performance Measures* (Army Class) research program was to explore the use of several experimental measures for selection and MOS classification. Results showed that the TAPAS provided significant incremental validity over the ASVAB for predicting attrition, end of training criteria, and in-unit performance (Knapp & Heffner, 2009; Knapp, Owens & Allen, 2011). In addition, this research also showed that the TAPAS provided non-trivial gains in classification efficiency over the ASVAB alone.

Additional predictive validity evidence for the TAPAS was collected during the U.S. Army's *Expanded Enlistment Eligibility Metrics* (EEEM) research project from 2007-2009 (Knapp & Heffner, 2010). The EEEM effort was conducted in conjunction with ARI's longitudinal validation. Again, TAPAS dimensions showed incremental validity over the Armed Forces Qualification Test (AFQT) for predicting several performance criteria. For example, when TAPAS trait scores were added into a regression analysis based on a sample of several hundred Soldiers, the multiple correlation increased by .26 for the prediction of physical fitness, by .16 for the prediction of disciplinary incidents, and by .20 for the prediction of 6-month attrition (Allen, Cheng, Putka, Hunter, & White, 2010). None of these criteria were predicted well by AFQT alone (predictive validity estimates were consistently below .10).

Based on the results for the Army Class and EEEM research projects, the U.S. Army approved the initial operational testing and evaluation (IOT&E) of the TAPAS for use with Army applicants at Military Entrance Processing Stations (MEPS). Since this project began in May of 2009, the TAPAS has been administered to approximately 420,000 Army, 115,000 Air Force, and 70,000 Navy applicants. With these data, a clearer picture of the validity of the TAPAS in operational settings has emerged. For example, this research has shown that the TAPAS has validity for predicting a broad range of performance criteria including Army Physical Fitness Test (APFT) scores, disciplinary incidents, and attrition from the U.S. Army (Knapp & Heffner, 2012). Additional research demonstrated the utility of the TAPAS for predicting performance within specific MOS (Nye, Drasgow, Chernyshenko, Stark, Kubisiak, White, & Jose, 2012) and for identifying and selecting high potential Soldiers for recruiting duty assignments (Horgen, Nye, White, LaPort, Hoffman, Drasgow et al., 2013). Therefore, a growing body of evidence suggests that the TAPAS may be useful both for Soldier selection and classification into specific MOS.

## **Purpose of the Current Research**

Given its validity in past research, the TAPAS may also be useful for identifying individuals who have high potential to become ARSOF personnel. As such, the goal of the present research was to explore the use of the TAPAS for predicting performance in an ARSOF assessment and selection course. Specifically, we examined whether the TAPAS scales could be used to form a composite for predicting ARSOF selection.

## METHOD

### Sample

The data for this research were collected from 1,216 candidates participating in ARSOF assessment and selection courses from February to June 2012. All candidates completed the TAPAS immediately prior to beginning the course. The two largest MOS of Soldiers in the sample were Infantry 11B ( $n = 269$ ) and Special Forces (Enlistment Option) 18X ( $n = 219$ ). Approximately 75% of the sample was ranked E3-E5, and 11% were ranked O2-O3. Fifty-six percent had been in the Service for less than 3 years.

### Measures

**Predictor Measure: Tailored Adaptive Personality Assessment System (TAPAS).** A 120-item static version of the TAPAS specifically designed for ARSOF personnel was administered to the candidates. Table 1 lists the 15 personality dimensions assessed in this version of the TAPAS. The total testing time for these dimensions was 30 minutes. Individuals who did not complete at least 101 of the 120 items were excluded from the analyses. Table 2 shows the inter-correlations among the TAPAS dimensions.

**Outcome Measure: ARSOF Course Selection.** The criterion for this research was the ARSOF course selection outcome for each candidate. Specifically, this research focused on whether Soldiers were selected for ARSOF training following the assessment and selection course. This selection outcome (i.e., selected versus not selected) and a description of the reason for a negative outcome (e.g., voluntary withdrawal) for each individual were obtained from administrative records for the course.

### Overview of Analyses

Using outcome information from the course, a dichotomous variable was created by coding selection following ARSOF course completion as 1 and voluntary or involuntary withdrawals from the course as 0. Using this coding scheme, 48% of the sample ( $n = 585$ ) were coded 1 (selected). The total sample size for analyses with this variable was  $n = 1,216$ .

With this criterion, we used correlation and regression analyses to examine the predictive validity of the TAPAS for ARSOF personnel. Because the criterion variable was dichotomous, we used logistic regression to identify the TAPAS scales that were significant predictors of ARSOF course selection and to develop a composite of TAPAS scales for predicting this criterion. The composite may be useful for identifying high potential ARSOF candidates that are likely to perform well in the course. Similar composites are being developed for the selection and classification of Army GPF Soldiers (Nye, Drasgow, Chernyshenko et al., 2012). However, given the nature of ARSOF, the TAPAS scales that predict performance in this group are likely to differ from the broader group of Army GPF applicants.

Table 1  
**TAPAS Dimensions Assessed**

| <b>TAPAS Facet Name</b> | <b>Brief Description</b>   | <b>"Big Five" Broad Factor</b> |
|-------------------------|--|--------------------------------|
| Dominance               | High scoring individuals are domineering, "take charge" and are often referred to by their peers as "natural leaders."   | Extraversion                   |
| Attention Seeking       | High scoring individuals tend to engage in behaviors that attract social attention; they are loud, loquacious, entertaining, and even boastful.                        |                                |
| Achievement             | High scoring individuals are seen as hard working, ambitious, confident, and resourceful.  | Conscientiousness              |
| Responsibility          | High scoring individuals are dependable, reliable and make every effort to keep their promises.  |                                |
| Non-Delinquency         | High scoring individuals tend to comply with rules, customs, norms, and expectations, and they tend not to challenge authority.  |                                |
| Adjustment              | High scoring individuals are worry free, and handle stress well; low scoring individuals are generally high strung, self-conscious and apprehensive.                   | Emotional Stability            |
| Even Tempered           | High scoring individuals tend to be calm and stable. They don't often exhibit anger, hostility, or aggression.   |                                |
| Optimism                | High scoring individuals have a positive outlook on life and tend to experience joy and a sense of well-being.   |                                |
| Intellectual Efficiency | High scoring individuals are able to process information quickly and would be described by others as knowledgeable, astute, and intellectual.                          | Openness to Experience         |
| Tolerance               | High scoring individuals are interested in other cultures and opinions that may differ from their own. They are willing to adapt to novel environments and situations. |                                |
| Physical Conditioning   | High scoring individuals tend to engage in activities to maintain their physical fitness and are more likely to participate in vigorous sports or exercise.            | TAPAS Specific Facets          |
| Adventure Seeking       | High scoring individuals enjoy participating in extreme sports and outdoor activities.   |                                |
| Courage                 | High scoring individuals stand up to challenges and are not afraid to face dangerous situations.   |                                |
| Situational Awareness   | High scoring individuals pay attention to their surroundings and rarely get lost or surprised.   |                                |
| Team Orientation        | High scoring individuals prefer working in teams and help people work together better.   |                                |

Table 2

*Correlations Between the TAPAS Scales in the Sample of ARSOF Candidates*

| TAPAS Scales               | 1           | 2           | 3           | 4           | 5          | 6           | 7          | 8          | 9          | 10         | 11         | 12         | 13  | 14         | 15 |
|----------------------------|-------------|-------------|-------------|-------------|------------|-------------|------------|------------|------------|------------|------------|------------|-----|------------|----|
| 1. Achievement             | --          |             |             |             |            |             |            |            |            |            |            |            |     |            |    |
| 2. Adjustment              | .09         | --          |             |             |            |             |            |            |            |            |            |            |     |            |    |
| 3. Adventure Seeking       | <b>.11</b>  | .17         | --          |             |            |             |            |            |            |            |            |            |     |            |    |
| 4. Attention Seeking       | .03         | -.02        | <b>.09</b>  | --          |            |             |            |            |            |            |            |            |     |            |    |
| 5. Courage                 | <b>.23</b>  | <b>.19</b>  | <b>.29</b>  | .06         | --         |             |            |            |            |            |            |            |     |            |    |
| 6. Dominance               | <b>.19</b>  | <b>.12</b>  | <b>-.02</b> | <b>.18</b>  | <b>.14</b> | --          |            |            |            |            |            |            |     |            |    |
| 7. Even Tempered           | <b>.10</b>  | <b>.16</b>  | -.06        | <b>-.10</b> | -.03       | <b>-.09</b> | --         |            |            |            |            |            |     |            |    |
| 8. Intellectual Efficiency | <b>.18</b>  | <b>.17</b>  | <b>.08</b>  | .06         | <b>.14</b> | <b>.20</b>  | <b>.11</b> | --         |            |            |            |            |     |            |    |
| 9. Non-Delinquency         | <b>.12</b>  | <b>-.13</b> | <b>-.19</b> | <b>-.15</b> | -.06       | .02         | <b>.23</b> | .02        | --         |            |            |            |     |            |    |
| 10. Optimism               | <b>.13</b>  | <b>.26</b>  | .05         | -.04        | <b>.13</b> | <b>.12</b>  | <b>.12</b> | <b>.12</b> | .02        | --         |            |            |     |            |    |
| 11. Physical Conditioning  | <b>.22</b>  | .05         | <b>.14</b>  | <b>.07</b>  | <b>.11</b> | <b>.12</b>  | -.02       | .03        | -.03       | <b>.13</b> | --         |            |     |            |    |
| 12. Responsibility         | <b>.28</b>  | <b>.22</b>  | .03         | <b>-.10</b> | <b>.14</b> | <b>.13</b>  | <b>.18</b> | <b>.08</b> | <b>.20</b> | <b>.15</b> | <b>.09</b> | --         |     |            |    |
| 13. Situational Awareness  | <b>-.08</b> | .05         | <b>.07</b>  | <b>-.17</b> | -.01       | -.06        | .05        | <b>.12</b> | .01        | .06        | -.03       | <b>.07</b> | --  |            |    |
| 14. Team Orientation       | <b>.15</b>  | <b>.09</b>  | <b>-.10</b> | <b>.08</b>  | <b>.08</b> | <b>.16</b>  | <b>.19</b> | .00        | <b>.12</b> | <b>.10</b> | -.03       | <b>.22</b> | .00 | --         |    |
| 15. Tolerance              | .06         | <b>.07</b>  | <b>.11</b>  | .03         | -.02       | -.03        | <b>.18</b> | <b>.12</b> | .00        | <b>.07</b> | .00        | .07        | .03 | <b>.14</b> | -- |

Note: Bold values are significant at the .05 level. The sample size for these correlations was 1,216.

## TAPAS Predictive Validity for ARSOF

The descriptive statistics for each of the TAPAS scales are provided in Table 3. The means and standard deviations for the scales are provided for both the ARSOF candidates who were assessed for this research and for the MEPS sample of Army applicants that has been collected as part of the TAPAS IOT&E since May 2009. The means shown in Table 3 are the raw scores in each of these samples. These scores represent the mean ability estimates (i.e., theta estimates in Item Response Theory (IRT) terminology) based on the MDPP scoring algorithm used for the TAPAS. Although these are raw scores, the statements and parameters are consistent across the two samples. Thus, to the extent that all of our IRT assumptions are satisfied, providing both sets of descriptive statistics illustrates score differences between ARSOF candidates and the pool of Army GPF applicants on each of the TAPAS scales.

In general, differences between these groups were as expected. For example, ARSOF candidates scored higher on Physical Conditioning, Achievement, Tolerance, and Courage. In contrast, ARSOF candidates scored lower on Attention Seeking and Non-Delinquency compared to the MEPS sample. These comparisons provide an initial picture of the TAPAS personality profile of a typical ARSOF candidate.

Table 3

### *Descriptive Statistics for the TAPAS Dimensions*

| TAPAS Dimensions        | ARSOF Candidates <sup>a</sup> |     | MEPS Sample <sup>b</sup> |     |
|-------------------------|-------------------------------|-----|--------------------------|-----|
|                         | Mean                          | SD  | Mean                     | SD  |
| Achievement             | .42                           | .53 | .18                      | .48 |
| Adjustment              | .32                           | .53 | .02                      | .53 |
| Adventure Seeking       | -.23                          | .66 | -.25                     | .59 |
| Attention Seeking       | -.52                          | .58 | -.24                     | .55 |
| Courage                 | .67                           | .73 | .12                      | .54 |
| Dominance               | .29                           | .58 | .11                      | .58 |
| Even Tempered           | .22                           | .59 | .20                      | .48 |
| Intellectual Efficiency | .06                           | .59 | -.02                     | .57 |
| Non-Delinquency         | -.48                          | .57 | .11                      | .48 |
| Optimism                | .41                           | .43 | .18                      | .46 |
| Physical Conditioning   | .78                           | .66 | .06                      | .60 |
| Responsibility          | .58                           | .55 | .34                      | .46 |
| Situational Awareness   | -.04                          | .57 | .03                      | .49 |
| Team Orientation        | .18                           | .56 | -.06                     | .47 |
| Tolerance               | .20                           | .53 | -.19                     | .56 |

<sup>a</sup>n = 1,216. <sup>b</sup> Sample sizes range from 30,054 to 256,375. Not all TAPAS dimensions have been administered since 2009, so the sample sizes vary for each of the scales.

Table 4 provides mean TAPAS scale scores for each of the ARSOF course outcomes represented in the data set. Several differences are worth noting. First, individuals who voluntarily withdrew from the course or left due to poor performance on the physical tests scored lower on the Physical Conditioning scale than candidates who were selected (means of .48 and .68 compared to .86 in the selected group). Although those differences are not surprising for the group that failed the physical testing, the results seem to suggest that a number of people are withdrawing voluntarily because they are physically unprepared for the course. In addition, individuals who were not selected due to non-specific reasons scored lower on the Adjustment ( $M = .04$ ) and Responsibility ( $M = .36$ ) TAPAS dimensions compared to the selected candidates (means of .35 and .64, respectively). In other words, these individuals may not have been selected because they appeared less reliable (i.e., Responsibility) and/or were unable to handle stress (i.e., Adjustment) as well as others in the course. Finally, ARSOF candidates who withdrew from the course for medical reasons were not much different from those who were selected. This suggests that those individuals withdrew from the course because of random events rather than differences in their personality and motivation.

Overall, these comparisons provide some initial evidence for differences between the personality profiles in each of these groups. Given these differences, the personality dimensions measured by the TAPAS are likely to predict ARSOF selection. However, given the small sample sizes for many of these groups, subsequent analyses could only focus on variations between the selected and unselected groups rather than differentiating among the various reasons for not being selected.

Table 4

***Mean TAPAS Scale Scores by ARSOF Selection Outcome***

| TAPAS Dimensions        | Not Selected   |               |              |              |               | Selected<br>(N=585) |
|-------------------------|----------------|---------------|--------------|--------------|---------------|---------------------|
|                         | IVW<br>(N=321) | MED<br>(N=97) | NS<br>(N=20) | PT<br>(N=89) | VW<br>(N=104) |                     |
| Achievement             | .39            | .39           | .40          | .42          | .39           | .45                 |
| Adjustment              | .31            | .33           | .04          | .22          | .27           | .35                 |
| Adventure Seeking       | -.30           | -.30          | -.02         | -.27         | -.24          | -.17                |
| Attention Seeking       | -.48           | -.55          | -.41         | -.64         | -.57          | -.52                |
| Courage                 | .60            | .62           | .41          | .71          | .74           | .71                 |
| Dominance               | .25            | .35           | .24          | .33          | .33           | .30                 |
| Even Tempered           | .24            | .17           | .27          | .16          | .11           | .25                 |
| Intellectual Efficiency | .00            | .03           | .01          | .13          | .03           | .09                 |
| Non-Delinquency         | -.49           | -.44          | -.56         | -.37         | -.51          | -.48                |
| Optimism                | .35            | .36           | .35          | .29          | .40           | .46                 |
| Physical Conditioning   | .74            | .82           | .88          | .48          | .68           | .86                 |
| Responsibility          | .53            | .58           | .36          | .48          | .51           | .64                 |
| Situational Awareness   | -.11           | .05           | -.11         | .11          | -.08          | -.03                |
| Team Orientation        | .20            | .14           | .41          | .24          | .19           | .16                 |
| Tolerance               | .24            | .12           | .39          | .31          | .12           | .19                 |

Note. IVW = Involuntary withdrawal, did not meet course standards; MED = Medical Reasons; NS = Non-Specific; PT = Physical Test; VW = Voluntary Withdrawal.

Table 5 provides the correlations between the 15 TAPAS dimensions and the ARSOF selection criterion examined here. The strongest correlates with this criterion were Optimism, Physical Conditioning, and Responsibility. Although those dimensions had the strongest relationships, the magnitudes of the correlations were still relatively weak. This may have been because of the dichotomous nature of the criterion, which violates the assumptions of the Pearson correlation and reduces the apparent magnitude of the effect. Therefore, the size of these relationships may be misleading and the actual effect sizes might be somewhat larger. As such, we next used logistic regression, which was designed to address these statistical issues and is more appropriate for analyzing dichotomous outcome variables.

Table 5

*Correlations between the TAPAS Scales and ARSOF Selection*

| TAPAS Scales            | ARSOF Selection <sup>a</sup> |
|-------------------------|------------------------------|
| Achievement             | .05                          |
| Adjustment              | .06                          |
| Adventure Seeking       | <b>.08</b>                   |
| Attention Seeking       | .01                          |
| Courage                 | .05                          |
| Dominance               | .01                          |
| Even Tempered           | .04                          |
| Intellectual Efficiency | .05                          |
| Non-Delinquency         | -.01                         |
| Optimism                | <b>.13</b>                   |
| Physical Conditioning   | <b>.11</b>                   |
| Responsibility          | <b>.10</b>                   |
| Situational Awareness   | .02                          |
| Team Orientation        | -.04                         |
| Tolerance               | -.02                         |

Note. Bold values are significant at the .05 level. <sup>a</sup>N = 1,216.

Table 6 provides the regression weights for the TAPAS scales that were significant predictors of ARSOF selection. The strongest predictor was the Optimism scale, which identifies individuals with a positive outlook on life and a general sense of well-being. Not surprisingly, the Physical Conditioning scale was also a significant predictor of selection, as was the Responsibility dimension. The Nagelkerke multiple R for this composite was .24, suggesting a moderate positive relationship between scores on this composite and ARSOF selection.

Table 6

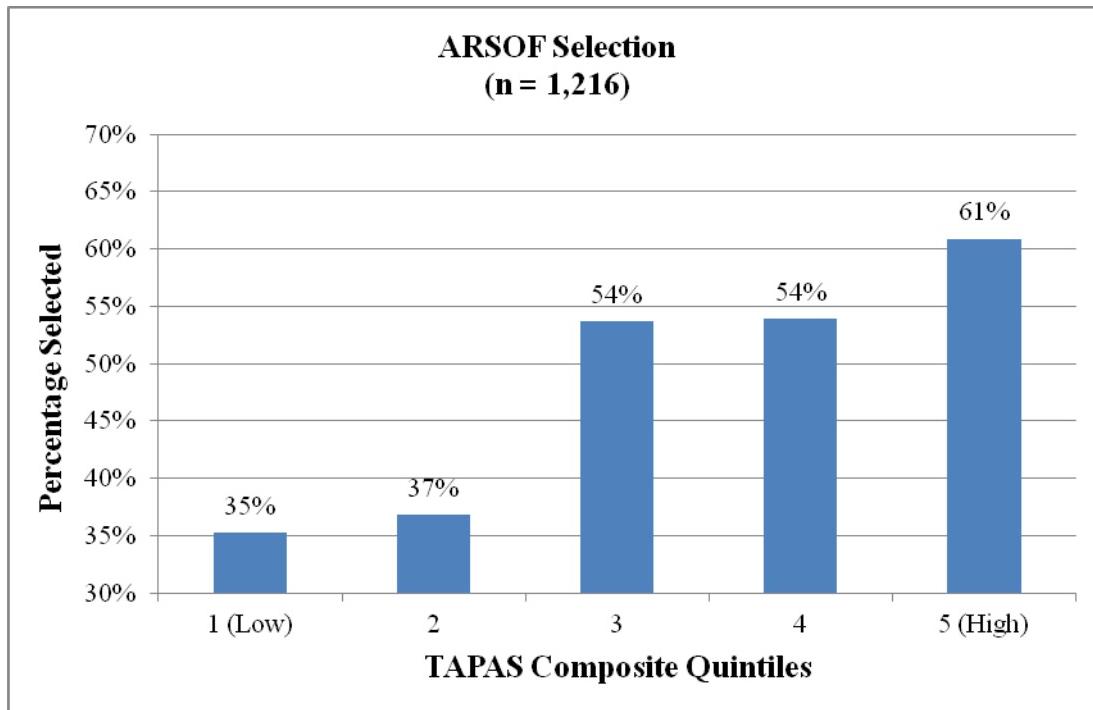
***Significant Regression Weights for the  
TAPAS Scales in the ARSOF Selection Composite***

| TAPAS Scales            | ARSOF Selection <sup>a</sup> |
|-------------------------|------------------------------|
| Constant                | -.61                         |
| Achievement             |                              |
| Adjustment              |                              |
| Adventure Seeking       | .17                          |
| Attention Seeking       |                              |
| Courage                 |                              |
| Dominance               |                              |
| Even Tempered           |                              |
| Intellectual Efficiency |                              |
| Non-delinquency         |                              |
| Optimism                | .52                          |
| Physical Conditioning   | .26                          |
| Responsibility          | .34                          |
| Situational Awareness   |                              |
| Team Orientation        | -.23                         |
| Tolerance               |                              |
| Multiple R              | .24                          |

<sup>a</sup> Because standardized weights are not available in logistic regression, the regression weights reported are the unstandardized coefficients.

Figure 1 illustrates the practical importance of these relationships. Using the weights shown in Table 6, we formed a TAPAS composite and calculated the predicted scores on this composite for each candidate in the sample. Next, we sorted candidates into quintiles on the basis of their composite scores. Figure 1 displays ARSOF selection rates for candidates in each of these quintiles. On the X-axis of this plot are the quintiles, formed on the basis of the TAPAS composite scores. The Y-axis for this graph represents the percentage of individuals in each quintile who were selected following the ARSOF course.

As expected, higher TAPAS scores (i.e., the top quintiles) were associated with higher percentages of selection. As shown in Figure 1, only 35% of candidates who scored in the lowest quintile on the TAPAS composite were selected. By contrast, 61% of individuals in the highest quintile were selected. These results suggest that the correlations illustrated in Tables 5 and 6 may have practical importance when used to identify high potential ARSOF candidates.



**Figure 1.** TAPAS composite quintile plot for ARSOF selection.

### Conclusions and Future Directions

Previous research has shown that the TAPAS may be useful for Soldier selection and can provide incremental validity over the AFQT for predicting key criteria such as physical fitness, attrition, performance ratings, and personal discipline (Allen et al., 2010; Knapp & Heffner, 2009; Knapp & Heffner, 2012). Based on large samples from a number of different MOS, research has also shown that the TAPAS can be useful for predicting performance within specific Army specialties and, therefore, may also be important for classifying Soldiers into MOS (Nye, Drasgow, Chernyshenko et al., 2012). Consequently, it is possible that the TAPAS could be useful for identifying individuals for selection into ARSOF.

Using a sample of candidates from an ARSOF assessment and selection course, the results presented in this report provide preliminary evidence of the utility of the TAPAS for identifying Soldiers with a higher potential for being selected for ARSOF training. Selection rates in the highest scoring quintile on the TAPAS composite were substantially higher than the corresponding selection rates in the lowest quintile (61% vs. 35%). Therefore, despite the modest Pearson correlations shown in Table 5, the TAPAS appears to have practical usefulness for predicting ARSOF selection.

As a follow-up to these encouraging initial findings, more research is needed to provide additional evidence for the validity of the TAPAS for ARSOF. Collecting additional data on ARSOF course candidates would provide larger sample sizes that could be used to cross-validate the TAPAS composite shown in Table 6 and explore differences across groups entering

ARSOF. For example, larger sample sizes could provide sufficient data for examining and predicting the performance of individuals entering ARSOF from MOS 18X. Soldiers in this MOS are specifically recruited for the ARSOF course at the MEPS and were one of the largest groups represented in the sample examined here ( $n = 219$ ). Although a number of Soldiers in this sample were from this MOS, there were still not enough to analyze this group separately. In addition, larger sample sizes would provide the data necessary for exploring predictors of the various reasons for ARSOF course withdrawal. In the current research, the sample sizes were only large enough to explore the personality predictors of ARSOF selection, but were not large enough to predict other specific reasons for withdrawal, such as APFT failure, withdrawal for non-specific reasons, or voluntarily withdrawing from the course. Collecting additional data to obtain larger sample sizes would allow these issues to be explored.

Additional research is also needed to explore the utility of the TAPAS for predicting other ARSOF criteria. In the current research, the focus was specifically on identifying predictors of ARSOF selection. However, past research has shown that the TAPAS can predict a broad range of performance criteria in the Army GPF. For example, the TAPAS appears particularly useful for predicting performance on the job, physical fitness, attrition, and disciplinary incidents (Horgen et al., 2013; Nye, Drasgow, Chernyshenko et al., 2012; Knapp & Heffner, 2012). Therefore, it is possible that the TAPAS would predict these criteria and others in ARSOF personnel.

## References

- Allen, M.T., Cheng, Y.A., Putka, D.J., Hunter, A., & White L. (2010). Analysis and findings. In D.J. Knapp & T.S. Heffner (Eds.). *Expanded enlistment eligibility metrics (EEEM): Recommendations on a non-cognitive screen for new soldier selection* (Technical Report 1267). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Campbell, J. P., & Knapp, D. J. (2001). *Exploring the limits in personnel selection and classification*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48, 26-34.
- Horgen, K. E., Nye, C. D., White, L. A., LaPort, K. A., Hoffman, R. R., Drasgow, F., Chernyshenko, O. S., Stark, S., & Conway, J. S. (2013). *Validation of the Non-Commissioned Officer Special Assignment Battery (NSAB)*. (Technical Report 1328). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knapp, D. J., & Heffner, T. S. (Eds.). (2009). *Predicting Future Force Performance (Army Class): End of training longitudinal evaluation* (Technical Report 1257). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knapp, D. J., & Heffner, T. S. (Eds.). (2010). *Expanded Enlistment Eligibility Metrics (EEEM): Recommendations on a non-cognitive screen for new soldier selection* (Technical Report 1267). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knapp, D. J., & Heffner, T. S. (Eds.). (2012). *Tier One Performance Screen Initial Operational Test and Evaluation: 2011 Interim Report* (Technical Report 1306). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Knapp, D. J., Owens, K. S., & Allen, M. T. (Eds.). (2011). *Validating Future Force Performance Measures (Army Class): First In-Unit Performance Longitudinal Evaluation* (Technical Report 1293). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Nye, C. D., Drasgow, F., Chernyshenko, O. S., Stark, S., Kubisiak, C., White, L. A., & Jose, I. (2012). *Assessing the Tailored Adaptive Personality Assessment System (TAPAS) as an MOS Qualification Instrument* (Technical Report 1312). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Nye, C. D., Drasgow, F., Stark, S., Chernyshenko, O. S., & White, L. S. (2012). Appendix E: Development of TAPAS Composites for Predicting Army-Wide Criteria. In D. J. Knapp

& T.S. Heffner (Eds.). *Tier One Performance Screen Initial Operational Test and Evaluation: 2011 Interim Report* (Technical Report 1306). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin, 124*, 262-274.

Stark, S., & Chernyshenko, O. S. (2007, June). *Adaptive testing with the multi-unidimensional pairwise preference (MUPP) model*. Paper presented at the 2007 Graduate Management Admissions Council conference on computerized adaptive testing. Minneapolis, MN.

Stark, S., Chernyshenko, O. S., Drasgow, F., & White, L. A. (2012). Adaptive testing with multidimensional pairwise preference items: Improving the efficiency of personality and other noncognitive assessments. *Organizational Research Methods, 15*, 463-487.

White, L. A., & Young, M. C. (1998, August). *Development and validation of the Assessment of Individual Motivation (AIM)*. Paper presented at the annual meeting of the American Psychological Association, San Francisco, CA.

White, L. A., Young, M. C., Hunter, A. E., & Rumsey, M. G. (2008). Lessons learned in transitioning personality measures from research to operational settings. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 1*, 291-295.

White, L. A., Young, M. C., & Rumsey, M.G. (2001). ABLE implementation issues and related research. In J. P. Campbell & D.J. Knapp (Eds.), *Exploring the limits in personnel selection and classification*. (pp. 525-558). Hillsdale, NJ: Erlbaum.